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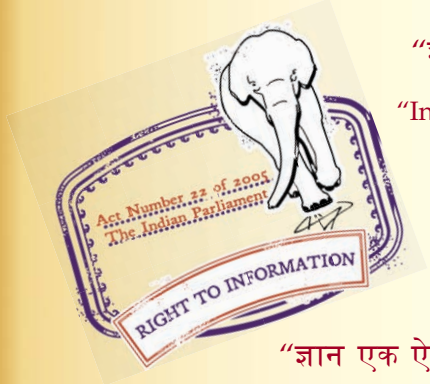

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Indian Standard

SPECIFICATION FOR FLEXIBLE POLYURETHANE FOAM FOR DOMESTIC MATTRESSES

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Indian Standard

SPECIFICATION FOR FLEXIBLE POLYURETHANE FOAM FOR DOMESTIC MATTRESSES

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 31 December 1975, after the draft finalized by the Plastics Sectional Committee had been approved by the Chemical Division Council.

0.2 This standard has been formulated to ensure the production and supply of a satisfactory quality of material. The foam is a specially manufactured chemical compound and it should not contain impurities or harmful residues such as amines which are volatile and driven off by the heat generated in the formation of foam. A number of adhesives are used in the manufacture of foam mattresses. Any adhesive used should be either nitrile or neoprene based. If neoprene based adhesives are used, it shall not have acidity more than *p*H 3·5. The adhesives should be able to withstand heat and moisture treatments as effectively as the foam itself.

0.3 In the preparation of this standard assistance has been taken from BS : 4541-1970 'Polyurethane interior foam cores for domestic mattresses for adults' issued by the British Standards Institution.

0.4 This standard contains clauses **3.3, 3.4, 3.6** and **4.1** which call for agreement between the supplier and the purchaser.

0.5 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

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1. SCOPE

1.1 This standard prescribes the requirements and the methods of sampling test for flexible polyurethane foam for domestic mattresses.

*Rules for rounding off numerical values (*revised*).

2. TERMINOLOGY

2.1 For the purpose of this standard, definitions given in IS : 2828-1964* and IS : 7888-1976† shall apply.

3. REQUIREMENTS

3.1 Constituents — The mattress core shall be flexible polyurethane foam of polyether or polyester type which is defined as expanded cellular product produced by interaction of poly-hydroxy compounds, water and isocyanate. The foam shall consist of cells of uniform characteristics which are essentially open and inter-connecting. The core may be of one, two or more layers of different densities provided that the properties of the whole core comply with the requirements specified in **3.4** to **3.11**. Different constructional designs like full foam, laminated layers, profiled layers, etc, are also permitted.

3.2 Condition — The foam core shall be clean in appearance and free from any objectionable odour and any residual amines likely to be harmful to human tissues.

3.3 Colour — Colour of the polyurethane foam core shall be as agreed to between the purchaser and the supplier.

3.4 Dimensions and Tolerances

3.4.1 *Dimensions* — Dimensions shall be as specified by the purchaser provided they fall within the following limits:

Length	1 800 mm, *Min*
Width	750 mm, *Min*
Thickness	75 mm, *Min*

3.4.1.1 *Tolerances* — The tolerances on length and width shall be as given below:

Length and Width	*Tolerance*
mm	mm
750 to 900	$\begin{matrix} -0 \\ +10 \end{matrix}$
901 to 1 350	$\begin{matrix} -0 \\ +25 \end{matrix}$
1 351 to 2 000	$\begin{matrix} -0 \\ +40 \end{matrix}$

Thickness	*Tolerance*
75 to 150 mm	$\begin{matrix} -0 \\ +5 \text{ mm} \end{matrix}$

*Glossary of terms used in plastics industry.
†Methods of test for flexible polyurethane foam.

3.5 Indentation Hardness Characteristic — The load quotient determined as prescribed in **6.3.1** and **6.3.2** of IS : 7888-1976* with a sample of 380 × 380 × 100 mm shall not be less than 1·9 : 1.

3.5.1 When the thickness of the specimen is not representative of the mattress core as a whole as in laminates or profiled construction the test shall be performed on the complete thickness of the core.

3.6 Indentation Hardness Index — Indentation hardness index is the load required to produce a deflection of 40 percent of initial thickness of the sample in accordance with the method described in **6.3.3** of IS : 7888-1976*. The value shall be as agreed to between the purchaser and the supplier. When the thickness of the test specimen is not representative of the core as in the case of laminates or profiled construction the test shall be performed on the complete thickness of the core.

3.7 Density — Overall density of mattress core shall be not less than 27 kg/m³.

3.8 Tensile Strength — Tensile strength of the foam shall be not less than 1 kg/cm² (98 kN/m²) when tested as prescribed in **5** of IS : 7888-1976*.

3.9 Heat Ageing — When the foam is subjected to the heat ageing test as prescribed in **10** of IS : 7888-1976* the tensile strength shall not be less than 70 percent of initial value as specified in **3.8**.

3.10 Compression Set — When the foam is tested in accordance with **8** of IS : 7888-1976*, the compression set shall be not more than 10 percent.

3.11 Durability — When the foam sample is subjected to the fatigue test as described in **7** of IS : 7888-1976* the loss in 25 percent indentation hardness characteristics tested as specified in **3.6** shall not be more than 30 percent of the initial value and the reduction in thickness shall not be more than 10 percent of the initial value.

4. PACKING AND MARKING

4.1 Packing — The material shall be packed as agreed to between the purchaser and the supplier.

NOTE — To avoid deterioration of foam mattresses during storage, it shall be kept in well-ventilated rooms edgewise away from direct sunlight and not exposed to ultraviolet light.

4.2 Marking — The packages shall be marked with the following information by a non-staining ink:

a) Name of the manufacturer and trade-mark, if any;
b) Lot or batch number;
c) Date of manufacture ; and
d) Dimensions of the mattresses.

*Methods of test for flexible polyurethane foam.

4.2.1 The material may also be marked with the Standard Mark.

NOTE — The use of the Standard Mark is governed by the provisions of the Bureau of Indian Standards Act, 1986 and the Rules and Regulations made thereunder. The Standard Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well defined system of inspection, testing and quality control which is devised and supervised by BIS and operated by the producer. Standard marked products are also continuously checked by BIS for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

5. SAMPLING

5.1 The sampling shall be done as prescribed in **12** of IS : 7888-1976*.

*Methods of test for flexible polyurethane foam.

BUREAU OF INDIAN STANDARDS

Headquarters :

Manak Bhavan, 9 Bahadur Shah Zafar Marg, NEW DELHI 110002

Telephones : 3 31 01 31, 3 31 13 75 Telegrams : Manaksanstha
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*Sales Office in Bombay is at Novelty Chambers, Grant Road, Bombay 400007 — 89 65 28

†Sales Office in Calcutta is at 5 Chowringhee Approach, P. O. Princep Street, Calcutta 700072 — 27 68 00

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